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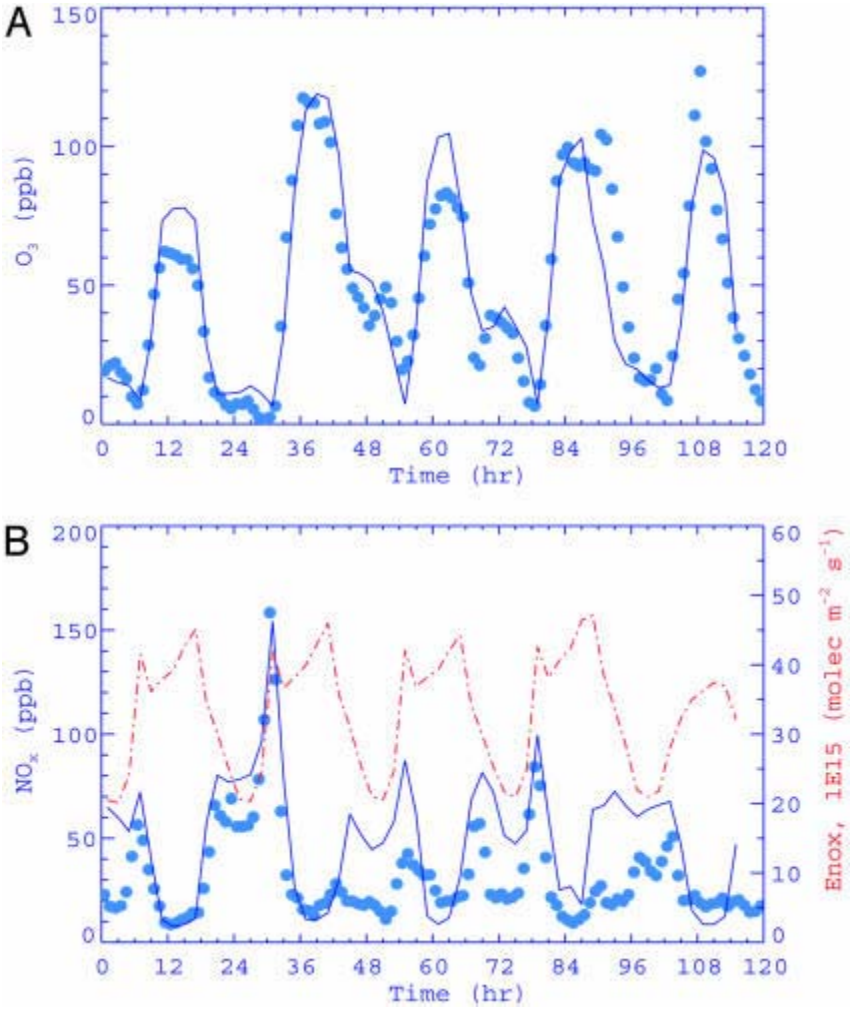
Sceye is pleased to provide supporting comments to **The New Mexico Environment Department draft regulation pursuant to the directives of Section 74-2-5.3 of the New Mexico Air Quality Control Act.**

https://www.env.nm.gov/new-mexico-methane-strategy/wp-content/uploads/sites/15/2020/07/Draft-Ozone-Precursor-Rule-for-Oil-and-Natural-Gas-Sector-Version-Date-7.20.20.pdf

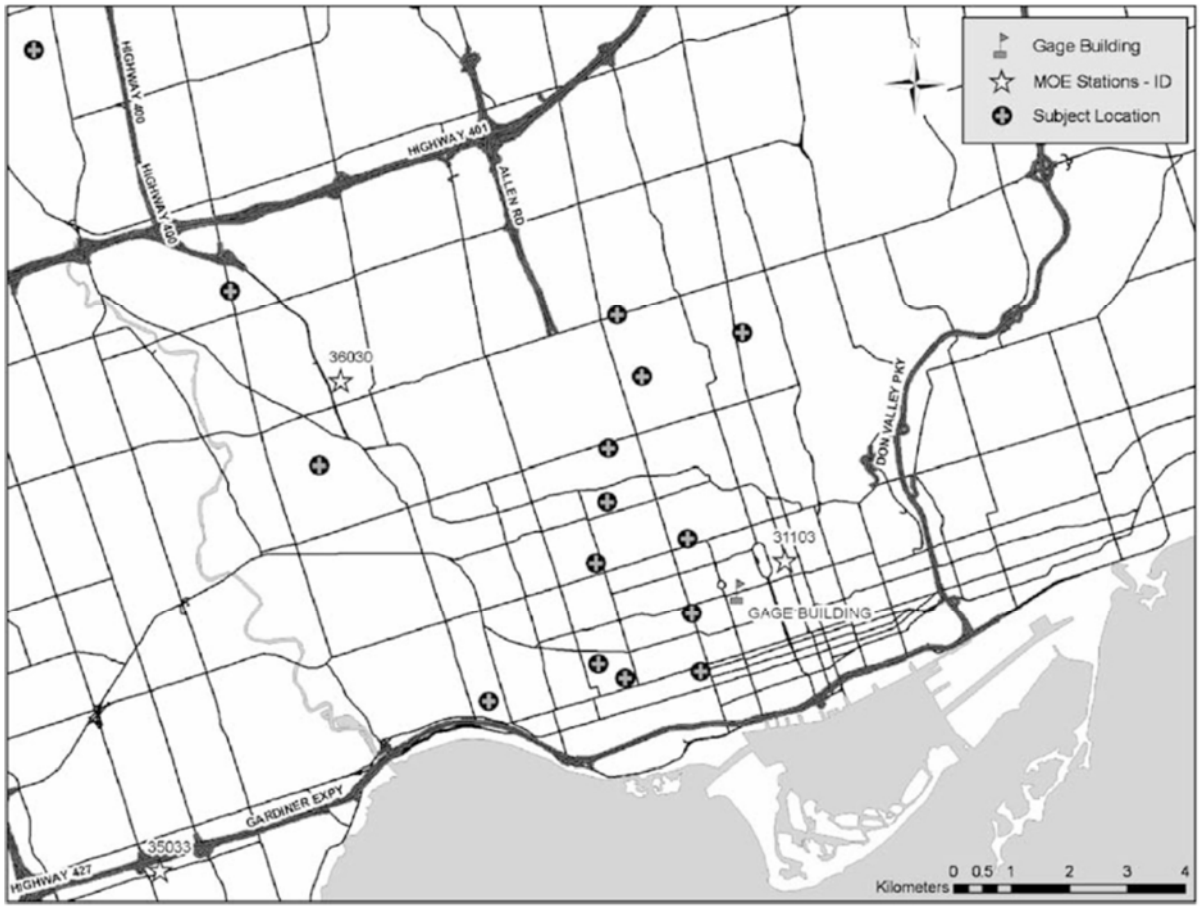
1) The chemistry of ozone formation from reactions of precursor VOCs and NOx is well established. Further, it is known that VOC and NOx concentrations show high diurnal variation based on levels of industrial activity. The below graph illustrates by showing NOx and ozone concentration-time profiles in the Houston. Peak concentrations of precursors clearly occur in advance of ozone concentrations (and peak UV levels). Therefore, sampling based on time weighted averages are unlikely to capture peak emissions; real-time monitoring would provide a more accurate picture of the temporal variation of two key precursor chemicals for tropospheric ozone generation.



Temporal evolution of surface ozone and NOx concentrations over Houston during September 7-11, 1993 (Zhang et al, 2004).

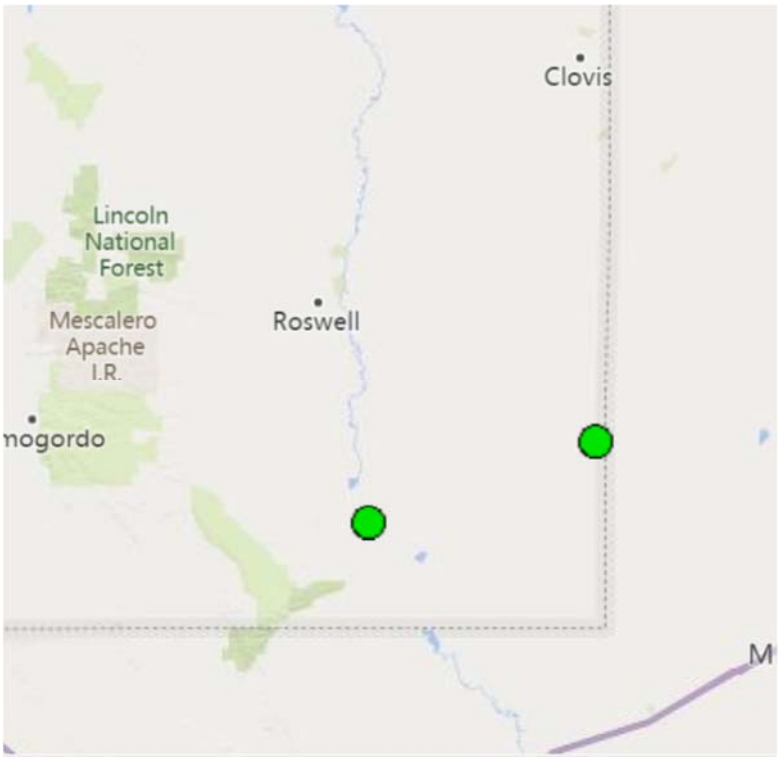
2) Spatial variation in the location of monitoring stations is important to capture community levels of multiple sources on ambient ozone concentrations. However, it is noted from the study by

Kim et al (2006) that central monitoring stations are correlated to personal exposure measurements for NOx, therefore allowing such measurement techniques to be useful exposure metrics in air pollution epidemiological studies. However, it is noted that CO and potentially VOCs may have much more spatial variation due to their source and dispersion profile. The below figure shows the spatial distribution of monitoring locations and personnel in the study.



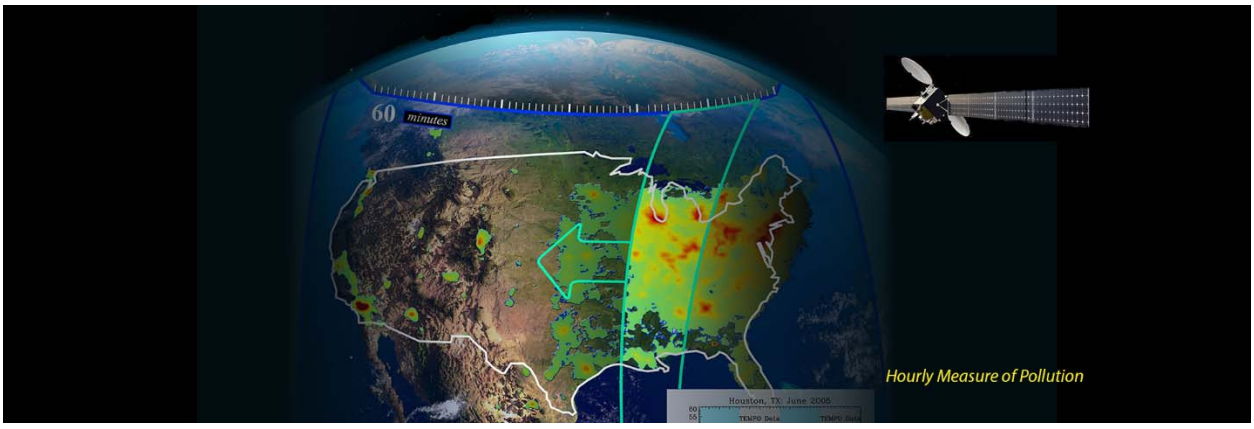
Map of Toronto and location of monitoring stations as well as study volunteer homes (Kim et al 2006)

The New Mexico Environment Department maintains a network of monitoring stations. There are two stations located in the southeast region of the state: Carlsbad and Hobbs. An evaluation of the data from these monitoring stations correlated with peak emission events from industrial activity in the Permian Basin could provide insight into how well the ambient measurements are able to capture industrial activities. Additionally, regular sampling campaigns to characterize the spatiotemporal variation in VOC, NOx, and ozone levels is recommended. Evaluation of ambient concentrations is important to quantify the impact of administrative and engineer controls are the emission source.



Location of two air pollution monitoring stations near the Permian Basin. Source: NMED

3) Monitoring technologies from aerial applications have seen steady improvement in technology, driven primarily by satellite-based observations. An example is the TEMPO instrument flown by NASA to provide measurements of ozone and nitrogen dioxide across North America.



Graphical overview of TEMPO mission. Source: tempo.si.edu

The spatiotemporal resolution is 1.25x2.8 mi with measurements taken hourly; however, what is lacking is long-term persistence over emissions sources. Approaches to provide persistent monitoring capability over an area should be evaluated; these may be from High Altitude

Pseudo Satellites such as airships. These technologies will dramatically improve air quality forecasts and emission control strategies, and enable effective early public warning of pollution events, thus providing more transparency to New Mexico's Environment Department and its stakeholders.